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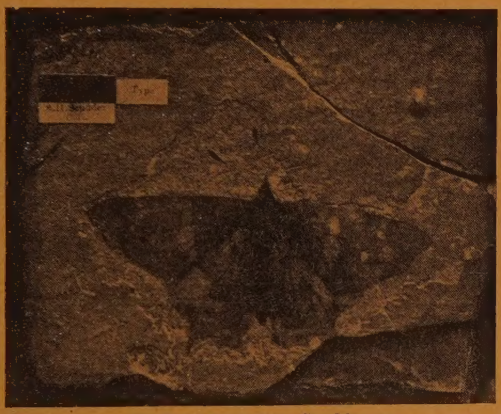

Prodryas persephone Scudder.

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PSYCHE

VOL. XXIV APRIL, 1917 No. 2

DESCRIPTIONS OF A FEW NEW DIAPHORUS FROM THE WESTERN STATES (DIPTERA).

By M. C. Van Duzee,
Buffalo, New York.

The seven species here described came into my hands soon after my revision of this genus was published in the Bulletin of the Buffalo Society of Natural Sciences, Vol. xi, No. 2, 1915.

I found the genus Diaphorus much better represented in California than was Chrysotus both as to species and individuals during my stay there from February to June, 1915. In the eastern states the Chrysotus are by far the more numerous.

One of the species included here is from Virginia; it came to hand after the others were described.

Diaphorus californicus sp. nov.

Male: Length, 3–4 mm. Front narrow, about as wide at the narrowest part as the width of the ocellar tubercle, wider below; face about as wide as long; face and front thickly covered with white pollen; antennæ black, third joint small, rather flattened in outline at tip with the arista inserted at the upper corner; palpi and proboscis black. Thorax and abdomen green, dulled with rather thick gray pollen; venter black; hairs of the abdomen black; hypopygium concolorous with the abdomen, its appendages are rather large brown lamellæ the outer part of which are nearly oval with a short slender stem and are fringed with long black hairs. Coxæ and legs black with the trochanters, knees and base of fore tibiæ yellowish brown (in the Alpine specimen almost wholly black); fore coxæ with black hairs and a row of black bristles the whole length of the front surface; the black hairs on the under side of the femora long, those on the hind pair rapidly increasing in length towards the apex, those at its base very short;

pulvilli of fore tarsi as long as the fifth tarsal joint, those of middle and hind tarsi about equal in size but not nearly as large as those of fore tarsi. Tegulæ and halteres pale yellow, the cilia of the former black. Wings tinged with gray, slightly brownish at extreme base; veins black; first vein reaching nearly half the distance to the tip of the second vein.

Described from three males from California. Two taken at Los Cerritos, Los Angeles Co., March 21, and April 3, and one taken at Alpine, San Diego Co., April 10.

This closely resembles *D. lamellatus* Lœw but differs in the shape of the lamellæ of the hypopygium and in having longer hair on the under side of the hind femora on their apical half. The lamellæ of *lamellatus* are gradually narrowed towards their base while this species has them narrowed abruptly into a slender stem.

Diaphorus nudus sp. nov.

Male: Length, 2.5 mm. Face about as broad as long, covered with gray pollen; palpi black, eyes contiguous; antennæ small, black, third joint rounded at tip about as long as broad; arista subapical; orbital cilia blackish. Thorax dark brown with brownish gray pollen and with a very slight greenish reflection posteriorly. Abdomen black; shining on the dorsum, in well preserved specimens with light gray pollen on the sides which contrasts strongly with the center of the dorsum; hairs of the abdomen black; hypopygium small with its appendages scarcely visible, the bristles at its tip of moderate size. Coxæ and femora black; extreme tips of fore femora, tibiæ and first two tarsal joints of all feet yellow, extreme tips of hind tibiæ and tips of first two tarsal joints of all feet black; tarsi blackened from the third joint; fore femora nearly bare below; fore tarsi about one and one-half times as long as their tibiæ; fore pulvilli enlarged; fore tibiæ without bristles; middle tibiæ with one minute bristle before basal third, a little shorter than their tarsi; hind tibiæ with three or four small hair-like bristles above, slightly longer than their tarsi. Tegulæ brown with brown cilia; knob of halteres pale yellow, stem dark brown. Wings grayish hyaline; veins brown; first vein reaching half way to the tip of the second vein; fourth vein ending a little back of the tip of the wing; last section of fifth vein about twice as

long as the cross-vein; costa somewhat enlarged from the tip of the first vein to beyond the tip of second vein; anal angle prominent.

Female: Front as wide as the face, covered with gray pollen, and with a black spot in the center which is quite conspicuous when viewed from in front; tarsi a little shorter than in the male, infuscated from the tip of the first joint. Abdomen and wings as in the male.

Described from two males and one female taken at Wallops Island, Va., May 25 and June 1, by W. L. McAtee.

This differs from *D. opacus* Lœw in having the knobs of the halteres pale yellow, and having the first vein of the wing longer; from *D. adustus* V. D. it differs in having the tibiæ, base of tarsi and knob of halteres yellow and the first vein longer. From *D. contiguus* Ald. to which it seems to be more closely related in having the tegulæ brown and the femora nearly bare below.

Diaphorus junctus sp. nov.

Male: Length, 3–3.5 mm. Face blackish green, as wide as long; eyes contiguous on the front; antennæ small, black, third joint somewhat rounded at tip but slightly indented where the arista is inserted which is to one side of the center; orbital cilia black. Thorax and abdomen dark green, quite shining but dulled with grayish pollen which often leaves three shining vittæ on the thorax and a dark central line on the abdomen; incisures of the abdomen black; in some specimens there are coppery reflections on the thorax and in others the whole body is more steel-blue; pleuræ more black than the dorsum; hypopygium small, the bristles at its tip strong but somewhat variable as to length, its appendages usually invisible but in some specimens quite prominent, depending on the position of the hypopygium; they seem to consist of a claw-like hook directed toward the base of the abdomen and a pair of blunt appendages just back of this hook, a short central filament still further in, and outside of the hook a small rounded elevation fringed with hairs (this elevation can be seen in most species of the genus). Coxæ, feet, tegulæ, their cilia and the halteres black. Fore femora with a row of black hairs along the lower posterior edge which are as long as the thickness of the femora; hind femora with only three or four below near the tip. Wings tinged with brown; veins black; first vein reaching half

the distance from the root of the wing to the tip of the second vein.

Female: Differs from the male in having the knob of the halteres yellow; the front as wide as the face and covered with yellowish white pollen; face as wide as long, divided near the center of its length by a sinuated suture, pollen of the face white.

Described from nineteen males and eight females taken in Los Angeles Co., Calif., April 3–29.

D. junctus is very much like *D. gibbosus* V. D. but has grayish pollen on the thorax, while that on the thorax of gibbosus is distinctly brown. The appendages of the hypopygium seem more complex than in *gibbosus* but these cannot always be seen and I have not seen the hypopygium of gibbosus stretched out to any extent. The pulvilli of the middle and hind feet seem a little more developed, it seems less variable than *gibbosus* which measures from 2–3 mm. and in which the tibiæ vary in color from quite yellow to wholly black, while I have not seen any specimens of this species in which the tibiæ were not black.

I think there is no doubt that this is a distinct species from that found in the east, the color of the pollen of the thorax seems to separate it and in life its brighter metallic color give it a very different appearance from our eastern species. I found it abundant in Los Angeles along the river on foliage, also took it at Los Cerritos by the Los Angeles river on foliage and on the wet sand.

Diaphorus snowii sp. nov.

Male: Length, 4 mm. Eyes contiguous on the center of the front, or nearly so; face a little longer than wide, almost black and with dark gray pollen; palpi and proboscis black; antennæ black, third joint slightly wider than long, flattened at tip in outline and with a slight notch for the insertion of the arista; inferior orbital cilia delicate but rather long and of a sordid whitish color. Thorax green with thin gray pollen, sometimes with longitudinal coppery stripes; pleuræ more blackish. Abdomen dark green, moderately shining; hypopygium conspicuous, concolorous with the abdomen, its appendages very small brownish lamellæ with black hairs, bristles at tip rather large; venter black with brownish hairs. Coxæ and feet altogether black, except knees and fore trochanters which are more or less yellowish; all the pulvilli much enlarged;

fore tibiæ without bristles; bristle near the base of the middle tibiæ small; bristles of hind tibiæ short but stout; fore and middle femora with a row of stout, bristle-like hairs below their entire length; hind femora with long brown hairs; all tarsi with a few longer hairs at tip of fifth joint, those of fore tarsi as long as that joint. Halteres yellow; tegulæ yellowish with more or less of a black border and black cilia. Wings tinged with brown, especially in front, sometimes yellow at the root; costa a little stouter beyond the tip of the first vein; first vein reaching about two fifths of the distance to the tip of the second vein; fourth vein ending in the apex of the wing.

Described from two males; one taken in Oak Creek Canyon, Ariz. (6000 ft.), by F. H. Snow, to whom the species is dedicated. Type in the Kansas University Collection. Since returning this specimen I have received a specimen taken at Grant, Colo. (Alt. 10,000 ft.), by L. O. Jackson, which I have used in completing the above description; this paratype was received from the U. S. Dept. of Agriculture, Bureau of Biological Survey, Washington, D. C., and has been returned to them.

Diaphorus sparsus sp. nov.

Male: Length, 4 mm. Eyes contiguous on the front; third antennal joint small, scarcely as long as wide, rather flattened in outline at base and tip; arista apical. Thorax and abdomen dark metallic green; base of abdominal segments and three indistinct and rather broken lines on the thorax coppery; pollen of thorax gray; bristles at tip of abdomen rather large. Coxæ, femora and hind tibiæ and tarsi black; fore and middle tibiæ and their metatarsi yellow; middle tibiæ in type specimen without bristles; pulvilli of all feet enlarged. Tegulæ and their cilia blackish; knobs of halteres pale yellow, their stems brownish. Wings tinged with brownish; veins dark brown.

Described from one male from Virginia, labeled Glencarlyn to mouth 4-in Run, June 11, 1916 (W. L. McAtee).

This species is very much like D. *spectabilis* Lœw, but has the hind tibiæ and tarsi deep, shining black; the pollen of the thorax is also gray, in *spectabilis* the pollen of the thorax is yellowish brown and all tibiæ are light yellow, at most brownish yellow.

The name refers to the broken coppery lines on the thorax but

these may prove to be wanting in some specimens when the species is better known.

Diaphorus inornatus sp. nov.

Male: Length, 2.5–3 mm. Face a little longer than wide, silvery; front green with the pollen of the face extending onto the lower portion a little; palpi yellowish white, blackish at base, rather large; lateral and lower orbital cilia white, abundant; antennæ black, third joint small with a short point near the center of the tip; arista apical. Thorax green, slightly dulled with gray pollen; pleuræ more blackish. Abdomen green with gray pollen along the sides; hypopygium small, its appendages concealed, the bristles at tip small but distinct in some specimens, in others scarcely noticeable. Coxæ black; femora dark green; tips of femora, fore trochanters, tibiæ and base of fore and middle tarsi yellow; tips of hind tibiæ, hind tarsi and fore and middle tarsi from the tip of the first joint infuscated; pulvilli of fore tarsi scarcely enlarged. Tegulæ, their cilia and the halteres whitish. Wings nearly hyaline; veins black; yellow at the extreme root of the wings; first vein reaching about one half the distance to the tip of the second.

Described from three males from California. Two were taken at Alpine, San Diego Co., April 10, and one taken at Fresno, May 6.

Diaphorus vulsus sp. nov.

Male: Length, 3 mm. Face a little narrower than the front, slightly wider below, covered with silvery white pollen; palpi white; front green with considerable white pollen; antennæ black, third joint somewhat triangular, pointed, scarcely as long as the width of the base; arista apical; lateral and inferior orbital cilia white, those above the eyes black. Thorax and abdomen metallic green with grayish white pollen, which is thickest on the pleuræ, metanotum and sides of thorax and abdomen; incisures of the abdomen very narrowly yellowish; venter yellowish brown at base; hypopygium concealed, its appendages very small, bristles at tip small. Fore coxæ and all the legs yellow; hind femora very slightly brownish above at tip; tarsi brownish almost from their base, black at tip; pulvilli of fore tarsi large white, those of middle and hind tarsi small; fore tarsi with minute pale hairs and black bristles;

each femora with a few small bristle-like hairs at tip on the lower posterior edge; middle tibiæ with only one bristle which is large, stout, black and inserted on the anterior side near the base; hind tibiæ with several bristles above, three or four of which are larger than the rest, the one near the base is the largest; feet slender, the fore tarsi longer than their tibiæ, middle tarsi about equal to their tibiæ in length, and hind tarsi shorter than their tibiæ. Tegulæ and knob of halteres pale yellow, stem of halteres brownish; cilia of the tegulæ yellow, yet appearing nearly black in certain lights. Wings grayish hyaline, tinged with yellowish brown in front of the third vein; first vein reaching about half the way to the tip of second vein; fourth vein ending in the apex of the wing; costa rather stout, black; veins brownish, yellow at the root of the wings.

Female: Agrees with the male except in sexual characters and that the face is wider and not silvery but rather thickly covered with white pollen and the third antennal joint is smaller.

Described from one male and two females taken at Bill William's Fork, Ariz., Aug. and Sept., by F. H. Snow.

Type in the Kansas University collection.

This species agrees with *D. variabilis* V. D. in most characters but differs in having no small bristle on the top of the middle tibiæ, there being no bristles on them except the large one near the base in front, in *variabilis* this small bristle is distinct as well as the preapical one on the outer side of the hind femora which is also lacking in this species; the body and legs are more slender and the wings and wing-veins more yellowish than in *variabilis*. Although these two species resemble each other so much yet I feel sure they are distinct.

ARTHROPODS IN BURMESE AMBER.

By T. D. A. Cockerell,
University of Colorado, Boulder, Colorado.

A study of a considerable quantity of Burmese amber, additional to that previously reported on, reveals a remarkably interesting fauna. Hymenoptera are represented by Bethylidæ, which are abundant, though often fragmentary; Evaniidæ of several genera, and a *Trigonalys*. A very thorough examination fails to reveal a single ant. Hemiptera (Heteroptera) are represented by two genera and four species of Enicocephalidæ. There are some Homoptera, not yet closely examined. The Diptera include Empididæ, *Sciara*, Psychodidæ (*Trichomyia*), and a Cecidomyiid. The Coleoptera include Elateridæ, Dermestidæ, Rhipiphoridæ, Ipidæ, and others not yet studied; but no Carabidæ or Paussidæ. There are many Blattids, young or fragmentary in every case; Termites are also frequent, but probably of few species. The mites are numerous and varied, but usually in poor condition for description; no spiders have yet been found. The Diplopods are represented by Polyxenus, and there is a good Pseudoscorpion, representing an apparently extinct genus. There is a very good Lepismatid, referred rather doubtfully to *Lampropholis*. The present paper puts on record a number of these discoveries. The amber (Burmite) was found in clay of Miocene age, but was derived from elsewhere, and may be much older. The specimens have been presented by Mr. R. C. J. Swinhoe of Mandalay to the British Museum. All the species described below were in a single large lump of amber, and therefore lived at the same time and place.

Pselaphognatha.

Polyxenus burmiticus sp. nov. (Polyxenidæ).

Length about 2400 microns; antennæ about 320; width of head about 560; longest lateral bristles about 560 microns long, longest caudal bristles about 720. Apparently sixteen pairs of legs. Antennæ apparently 7-jointed, counting a very minute and rather doubtful apical joint; fifth joint longest; first, second, fourth and

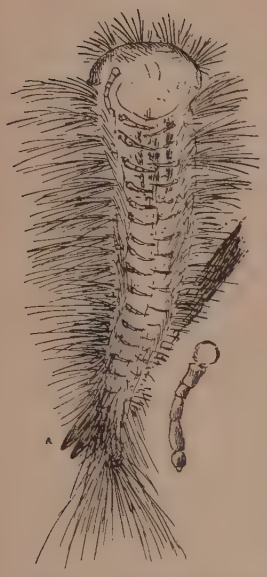

Fig. 1. *Polyxenus burmiticus.*

sixth subequal; third shorter. Bristles exceedingly abundant and long, dark fuscous.

Burmese amber, from R. C. J. Swinhoe; in the same piece as *Electrofœnus gracilipes*, about 30 mm. from it. This appears to be a true *Polyxenus*, but it is remarkable for the very long and copious bristles. The species described by Koch and Berendt from Baltic amber have short bristles, and are entirely different. Our animal is curiously like an Anthrenid larva, and on account of its long bristles resembles the much more ancient *Palæocampa* from the Pennsylvanian of Illinois. The structure figured at A, which I at first took for a pair of caudal appendages, is evidently the end of a piece of vegetable débris which appears on the other side.

Acarina.

Cheyletus burmiticus sp. nov. (Cheyletidæ).

Length about 736 microns; shining reddish-brown, with very little hair; mandibles ordinary; palpi extremely stout, strongly elbowed at base; claw well-formed, curved, on left palpus, but the right one appears minutely bidentate at end; thumb-papillæ lengthened, long and slender, ribbon-like, but not pectinate; legs as usual in the genus, so far as can be seen; abdomen broadly rounded posteriorly. The following measurements are in microns: length of palpus about 208; second joint of anterior leg about 160, the third about 120; last joint of second leg about 160.

Fig. 2. *Cheyletus burmiticus.* A, palpi; B, base of first leg.

Burmese amber, from R. C. J. Swinhoe. In the same slab as the type of *Winnertziola burmitica*, and 3 mm. from it; also 6

mm. from the type of *Scleroderma quadridentatum*. Although I cannot make out any palpal combs, the animal is evidently not a *Cheyletiella*.

Diptera.

Winnertziola burmitica sp. nov. (Cecidomyiidæ).

♀. Piceous, including legs and antennæ; wings clear, nervures ferruginous; surface of wings not conspicuously hairy, margin with long hairs; thorax narrow; abdomen long and narrow, the caudal appendages long and slender; venation as usual in the genus, the cross-vein not very oblique; antennæ apparently 11-jointed, but there is doubtless a second basal joint not seen, making 12 in all; antennal joints with long hairs, but no circumfili, whether with surface markings cannot be determined; the three joints before the last broader basally than apically; palpi large, apparently 3-jointed, but there is probably a small basal joint not seen, joint before the last not appreciably shorter than the last; tarsi with 5 joints, basal joint very short, second long; claws small, apparently simple, emporium so small that it cannot be clearly made out; halteres very large, the large club dark brown. The following measurements are in microns: total length about 1760; length of wing about 1120; length of antennæ apparently about 400, but they are seen obliquely, and are probably about 480; last joint of palpus 57; width of club of halter 64; length of hind femur 400; hind tarsal joints (1) 64, (2) 240, (3) 112, (4) 80, (5) 64.

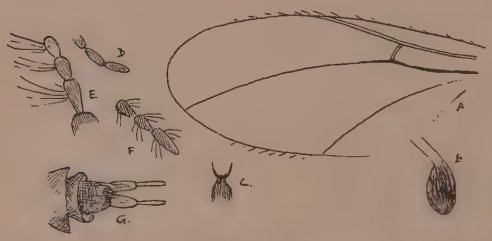

Fig. 3. *Winnertziola burmitica*. A, wing; B, halter; C, claws; D, palpus; E, basal part of antenna; F, end of antenna; G, caudal appendages.

Burmese amber, from R. C. J. Swinhoe; in the same slab as the type of *Enicocephalus swinhoei*, and 10 mm. from it. This may possibly be separable from *Winnertziola* on account of the long caudal appendages, the form of the palpi, the probably simple claws, etc., but some of these differences are doubtful, and the others are slight, so a separate genus hardly seems to be required. The allied genus *Winnertzia* is known from Baltic amber.

Coleoptera.

Dermestes larvalis sp. nov. (Dermestidæ).

A minute larva, about 750 microns long (not counting hairs); head, legs and hairs ferruginous; apical half of mandibles piceous, exactly as in modern *Anthrenus* larvæ; body covered with spinulose hairs, the dorsal ones very long and abundant, not tufted; longest hair from vicinity of head about 960 microns; caudal end with extraordinarily long hairs, the longest 3200 microns, not forming a distinct tuft; legs as in modern *Anthrenus* larvæ, with single sharp claw; femora with short hairs, tibiæ with bristles, hind tibiæ with small spines. The hind legs are about 320 microns long. The body is without corneous plates.

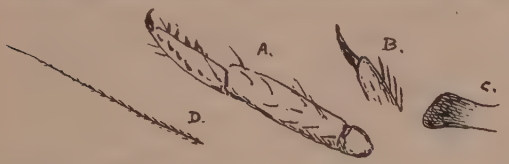

Fig. 4. *Dermestes larvalis* n. sp. A, hind leg; B, end of front leg; C, mandible; D, hair.

Burmese amber, from R. C. J. Swinhoe. In same slab as type of *Cryphalites rugosissmus*, and 33.5 mm. from it. The characters are exactly those of modern Dermestid larvæ, but the generic reference is of course not precise. The long hairs suggest *Dermestes* rather than some of the other common genera. Evidently the museum curator and entomologist, had they existed in Tertiary times, would have been troubled by Dermestids as they are today.

Hymenoptera.

Scleroderma (?) **quadridentatum** sp. nov. (Bethylidæ).

♀. Apterous. Head and thorax 1.7 mm. long; abdomen beyond first segment missing, but total length was probably about 3.5 mm.; head and thorax black, legs and abdomen ferruginous; antennæ pale ferruginous at base, the flagellum darker; mandibles ferruginous, at least 3-dentate, the outer margin strongly and evenly curved; antennæ 10-jointed, the scape extremely large and thick, fully twice as wide at apex as the next joint; head subquadrate,

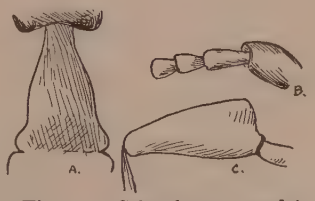

Fig. 5. *Scleroderma quadridentatum.* A, prothorax; B, base of antenna; C, hind femur.

narrowed and truncate posteriorly; eyes large and prominent; prothorax long, narrowly conical in outline, but the sides bulging, the whole thorax very long and narrow; metathorax posteriorly at sides with short but distinct teeth, four in all; anterior femora with upper margin concave, lower convex; hind femora very broad, cuneiform, the large end basad, the basal upper corner very prominent, obtusely rectangular; abdomen with a slender petiole, but rapidly widening, as in living forms. Hind tibiæ with a single long spur. The following measurements are in microns: greatest width of head 440; length of eyes 224; width of thorax in middle 368; width first abdominal segment 592.

Burmese amber, from R. C. J. Swinhoe. In the same slab as the type of *Winnertziola burmitica*, and 7.5 mm. from it. The specimen shows the ventral view, and the palpi are not visible, so the generic reference may be somewhat doubtful. The insert is, however, of this immediate alliance, and the relatively large laterally placed eyes indicate a more primitive type than typical living *Scleroderma*. Species of this genus (*S. tuberculata* Magr. and *S. luteicolle* Kieff.) are known in the existing fauna of Burma. The great antiquity of the genus is indicated by the fact that although the females are wingless, species occur on the most remote islands; the Hawaiian Is. (many species), Guam, the Seychelles and St. Helena.

Apenesia electriphila sp. nov. (Bethylidæ).

♂. Length about 2.5 mm.; black or piceous; wings clear, with light ferruginous stigma and nervures, venation typical for genus, stigma large, marginal cell open at end. Mandibles bidentate, the teeth stout; labial palpi 3-jointed; antennæ apparently 12-jointed, but turned down at ends, and possibly only 11-jointed; scape broad and flattened, curved; flagellar joints short and broad, antennal joints 2–7 longer than broad, 8–10 as broad as long; head broad, occipital margin sharp; eyes rather large, prominent, about 144 microns long; width of head

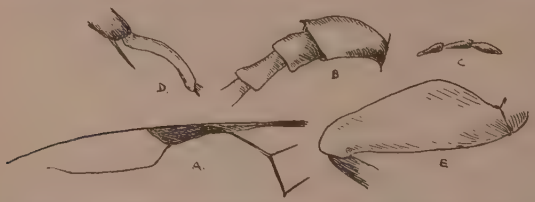

Fig. 6. *Apenesia electriphila*. A, stigma and adjacent parts; B, base of antenna; C, labial palpus; D, anterior basitarsus; E, posterior femur.

about 528 microns. Thorax long and narrow, about 480 microns wide in middle; anterior legs about 704 microns behind head; anterior femora curved, convex above, concave below; their tibiæ rather short (about 288 microns), with a single long spur; their tarsi long, the first joint longer than next three together, and strongly curved; hind femora extremely broad and flattened, the summit of the curve about half-way between base and middle; abdomen with a rather long petiole.

Burmese amber, from R. C. J. Swinhoe. In the same slab as the type of *Cryphalites rugosissimus*, and 24.5 mm. from it. Related to *Scleroderma* (?) *quadridentatum*, which may possibly belong to *Apenesia*, but on account of the black abdomen and various structural characters surely not its male.

DISTRIBUTIONAL NOTES ON NEW ENGLAND ODONATA.

Part I.

By R. Heber Howe, Jr.,
Thoreau Museum, Concord, Massachusetts.

Since Dr. P. P. Calvert's List was published in October, 1905, the following published corrections and additions have been made:

Argia apicalis (Say) Selys recorded from Maine by Dr. Calvert on the authority of Prof. Harvey was expunged by Dr. Calvert following an examination of the Harvey specimens by Mr. Williamson (Ent. News 17: 31. 1906).

Argia mæsta putrida (Hagen) was shown by Mr. E. B. Williamson to be synonymous with *Argia mæsta* Hagen (Ent. News 23: 200. 1912.)

In Dr. E. M. Walker's "The North American Dragon-flies of the Genus Æshna (Univ. Toronto Studies, Biol. Series, 1912) the following New England records for the genus were made:

Æshna cærulea septentrionalis Burm.
N. H. White Mts. (*Scudder*)

Æshna juncea Linn.
N. H. White Mts. (*Scudder*)

140. *Æshna interrupta* Walker. New species for New England
Me. Portland (*Jones*)
Vt. ——— (*Frost*)
Mass. ——— (*Uhler*)

141. *Æshna eremita* Scudd. New species for New England
Me. Six Ponds, Piscataquis Co. (*Harvey*)
N. H. Franconia (*Slosson*)
Hermit Lake, Mt. Washington (*Scudder*)

Æshna clepsydra Say
Me. Manchester (*Wadsworth*)
Mass. Brookline (*Shurtleff*)
Provincetown (*Benedict*)
Wilbrahim (*Hagen*)
Boston (*Uhler*)
Salem (*True*)
Natick (*Sanborn*)

142. *Æshna canadensis* Walker. New species for New England
Me. Bradley (*Harvey*)
Manchester (*Wadsworth*)
Norway (*Smith*)
Orono (*Harvey*)
N. H. White Mts. (*Shurtleff*)
White Mts. House (*Calvert*)
Franconia (*Calvert*)
Fabyans
Vt. Newport (*Slosson*)
Mass. ——— (*Needham*)

Æshna verticalis Hagan = *A. juncea verticalis* (Hagen) of Dr. Calvert's List
Me. Manchester (*Wadsworth*)
West Beach (*Hagen*)
Mass. Beverly
Cambridge
Nahant (*Moring*)
Salem (*Lane*)
Saugus
Sherbourne
Walpole (*Sprague*)
Westborn (*Needham*)
Wollaston (*Sprague*)

143. *Æshna tuberculifera* Walker
Me. Islesboro (*Dixon*)
Manchester (*Wadsworth*)
Mass. Walpole (*Sprague*)
Essex Co., (*Hagen*)
Provincetown (*Benedict*)
Hampden (*Needham*)
Westborn (*Needham*)

144. *Æshna umbrosa* Walker
Me. Manchester (*Wadsworth*)
Augusta (*Wadsworth*)
Norway (*Smith*)
Gorham
Millinocket (*Harvey*)
Russell Stream (*Corry*)
Bradley (*Harvey*)
Greenfield (*Harvey*)
Six Ponds (*Harvey*)
N. H. Franconia (*Slosson*)
White Mts. (*Sprague*)
Hermit Lake (*Scudder*)
Centre Harbor
Mass. Boston
Cambridge
Amherst (*Needham*)
Wilbrahim (*Martin*)
Auburndale
Gor Head = Gay Head

Æshna constricta Say
Me. Manchester (*Wadsworth*)
Mass. Hampden (*Needham*)

145. *Æshna mutata* Hagen
Mass. Wilbrahim (*Needham*)

In the Proceedings of the Thoreau Museum of Natural History, I: 41, 1915, Mr. E. L. Peirson recorded the capture of the following species in Concord, Mass., and Dr. Calvert in the Ent. News, **26**: 238–239, 1915 again noted Mr. Peirson's capture and added a record of a female taken by Mr. C. W. Johnson at Dedham, Mass.

Mr. E. J. Smith of Sherborn, Mass., kindly permits me to here record the capture of a male, on April 30, 1913, at Sherborn.

146. *Williamsonia lintneri* (Hagen) Davis
Mass. Concord (*Peirson*)
Dedham (*Calvert*)

In PSYCHE, 23: 12–15, 1916, the author recorded *Æeshna umbrosa* and *Æshna canadensis* as new to New England having overlooked Dr. Walker's records. *Libellula luctuosa* Burm., though not uncommon, was added to Dr. Calvert's List.

147. *Libellula luctuosa* Burm.
Mass. Concord (*Howe*)

I now wish to record records of a few species sent me from Brandon, Vt., by Mr. D. Lewis Dutton; a small lot from North Guilford, Conn., sent by Mr. Geo. L. Howe; two species from Cataumet, Mass., sent by Miss Theresa Winsor; a summer's catch in New Hampshire made with the continual aid and co-operation of Mr. David M. Little, and a spring and autumn catch at Concord, Mass., made with the help of my daughter, Miss Susan A. Howe, and the Misses Shaw.

Anax junius (Drury) Selys. May 27, 1912. New to Vermont
Æshna eremita Scudd. Aug. 31, 1915. New to Vermont
Æshna umbrosa Walker. May 6, 1915. New to Vermont
Basiaeshna janata (Say) Selys. May 22, 1912. New to Vermont
Plathemis lydia (Drury) Hagen. July, 1912. New to Vermont
Sympetrum rubicundulum (or var. *obtrusum*), teneral female. July, 1912, in either case new to Vermont

On September 18, 1915, I collected at Bristol and Middletown, R. I., and again at Middletown on June 3, 1916, and at Bristol on October 2, 1916. The following species were taken:

Lestes rectangularis Say. Bristol, Sept.
Enallagma civile (Hagen) Selys. Both stations, Sept.
Ischnura ramburii Selys. Both stations, Sept., Oct. 2
Anax junius (Drury) Selys. Middletown, Sept.

Æshna tuberculifera Walker. Bristol, Sept. New to Rhode Island

Libellula pulchella Drury, Middletown, Sept.

Plathemis lydia (Drury) Hagen. Bristol, Sept.

Pantala flavescens (Fab.) Hagen, teneral. Bristol, Sept. New to Rhode Island

Sympetrum rubicundulum (Say) Kirby. Both stations, Sept.

Ischnura posita (Hagen) Needham. Middletown, Sept. and June

The collection from North Guilford, Conn., contained the following:

148. *Celithemis monomelæna* Will. July, 1916. New to New England

Plathemis lydia (Drury) Hagen. July, 1916

The two species from Cataumet, Mass., were:

Erythrodiplax berenice (Drury) Ris. July, 1916

Epicordulia princeps (Hagen) Selys. July, 1916

I began collecting on Meredith Neck, N. H., on June 29 and visi ited various collecting grounds on the shores of Lake Winnepesaukee until August 23. These included Centre Harbor, Meredith, Moultonboro (Sanborn's Meadows), and made two trips to Lake Asquam, with one excursion to Newfound and one to Profile Lake. The list of species follows:

Agrion maculata Beauv. Meredith Neck, July 27. New to New Hampshire

Lestes disjunctus Selys. Meredith Neck and Moultonboro, Aug. 1–22

Lestes rectangularis Say. Meredith Neck, July 18–Aug. 15

Lestes vigilax Hagen. Meredith Neck and Moultonboro, July 6–Aug. 15. New to New Hampshire

Lestes inequalis Walsh. Meredith Neck and Moultonboro, July 6–Aug. 15

Argia mœsta Hagen. Meredith Neck and Moultonboro, July 7–Aug. 23. New to New Hampshire

Argia violacea (Hagen) Selys. Meredith Neck, July 17–Aug. 23. New to New Hampshire

Nehalennia irene (Hagen) Selys. Meredith, July 5–24 and Moultonboro

Enallagma calverti Morse. Profile Lake, Aug. 12. New to New Hampshire

Enallagma hageni (Walsh) Selys. Meredith and Moultonboro, July 2–11. New to New Hampshire

Enallagma ebrium (Hagen) Selys. Meredith Neck and Moultonboro, July 5–18

Enallagma civile (Hagen) Selys. Lake Asquam, Moultonboro and Meredith Neck, July 23 to Aug. 14. New to New Hampshire

Enallagma minusculum Morse. Meredith Neck, Aug. 6–23. New to New Hampshire

Enallagma traviatum Selys. Moultonboro, July 18. One female. New to New Hampshire

Enallagma exsulans (Hagen) Selys. Meredith Neck, July 17–Aug. 7. New to New Hampshire

Enallagma signatum (Hagen) Selys. Meredith Neck and Moultonboro, July 2–Aug. 22. New to New Hampshire

Enallagma pollutum (Hagen) Selys. Moultonboro, July 2. New to New Hampshire

Ischnura verticalis (Say) Selys. Meredith Neck, Centre Harbor, Moultonboro, July 5–Aug. 22

Hagenius brevistylus Selys. Meredith Neck and Moultonboro, July 12–Aug. 22

Gomphus exilis Selys. Meredith Neck and Moultonboro, June 30–Aug. 2

Dromogomphus spinosus Selys. Meredith Neck, Newfound Lake, Moultonboro, July 20–Aug. 14

Anax junius (Drury) Selys. Meredith, July 5–27

Æshna verticalis (Hagen). Meredith Neck, Aug. 7–18

Æshna clepsydra Say. Moultonboro, Aug. 14–27

Æshna canadensis Walker. Moultonboro, Meredith Neck, Jackson, Aug. 2–22

Æshna eremita Scudd. Profile Lake and Moultonboro, Aug. 12–14

Æshna umbrosa Walker. Meredith Neck, Aug. 7–18

149. *Nasiæshna pentacantha* Ramb. Moultonboro, July 9. New to New England

Basiæshna janata (Say) Selys. Meredith Neck, July 5–7

Boyeria vinosa (Say) McLachlan. Meredith Neck, July 25–Aug. 18. New to New Hampshire

Didymops transversa (Say) Hagen. Meredith Neck, July 11

Macromia illionoiensis Walsh. Meredith Neck and Moultonboro, Aug. 2–7

Neurocordulia obsoleta (Say) Selys. Meredith Neck, July 27–29. Crepuscular in habit

Epicordulia princeps (Hagen) Selys. Concord and Meredith Neck, June 29–Aug. 2. New to New Hampshire

Tetragoneuria cynosura simulans Mutt. = *T. c. semiaquea* (Burm) of Dr. Calvert's List. Meredith Neck and Moultonboro, July 2–20

Tetragoneuria spinigera (Selys) Selys. Meredith Neck, June 29–July 11

150. *Tetragoneuria morio* Mutt. Meredith Neck, June 29. New to New England

Somatochlora elongata (Scudd.) Selys. Centre Harbor and Jackson, July 14–Aug. 12

151. *Somatachlora williamsoni* Walker. Meredith Neck, July 17. New to New England

Cordulia shurtleffi Scudd. Moultonboro, July 8–18

Dorocordulia libera (Selys) Need. Moultonboro, July 8

Libellula exusta Say. Moultonboro and Meredith Neck, July 6–25

Libellula pulchella Drury. Centre Harbor, Meredith Neck, Moultonboro, July 5–Aug. 20

Libellula quadrimaculata Linn. Meredith Neck, Moultonboro, Centre Harbor, June 30–July 18

Plathemis lydia (Drury) Hagen. Centre Harbor, July 7

Sympetrum rubicundulum (Say) Kirby. Meredith Neck, Centre Harbor, Moultonboro, Profile Lake, July 11–Aug. 23

Sympetrum rubicundulum obtrusum (Hagen). Meredith Neck and Centre Harbor, July 5–7

Sympetrum vicinum (Hagen) Kirby. Meredith Neck and Jackson, Aug. 12–14

Leucorhinia frigida Hagen. Moultonboro, July 6–Aug. 14
Leucorhinia glacialis Hagen. Moultonboro, July 6–9
Leucorhinia intacta (Hagen) Hagen. Meredith Neck, and Moultonboro, Centre Harbor, June 30–July 27
Celithemis elisa (Hagen) Walsh. Moultonboro, July 18–Aug. 14. This species was also captured at Tyngsboro, Mass., on June 29.

I began collecting in Concord, Mass., with the first appearance of dragon-fly life and collected until June 28. On August 24 I returned from New Hampshire and collected until the end of the season. During these periods I added the following species to my Preliminary List published in PSYCHE (*ibid.*), bringing the number from 52 to 67.

Lestes uncatus Kirby. Common, June 27
152. (?) *Argia sedula* Hagen. Two specimens taken on June 2 were of doubtful determination by Mr. Williamson. The species would be new to New England.
Ischnura posita (Hagen) Need. Male, Sept. 3
Cordulegaster diastalops Selys. One female, June 1
Cordulegaster maculatus Selys. One male, June 28
Æshna tuberculifera Walker. One male, Sept. 3–6
Æshna verticalis Hagen. Not uncommon, Aug. 15–Oct. 1
Epicordulia princeps (Hagen) Selys. Two males, June 23, July 28
Boyeria vinosa (Say) MacLachlan. One seen Sept. 13
Tetragoneuria cynosura var. simulans Mutt. Several, June 23
Helocordulia uhleri (Selys) Need. One male, May 29
Cordulia shurtleffi Scudd. One female, June 27. New to Massachusetts
Libellula semifasciata Burm., teneral. June 23
Sympetrum rubicundulum var. *obtrusum* (Hagen). Male, Oct. 5
Leucorhinia intacta (Hagen) Hagen. Not uncommon, May 30–June 28

Through the kindness of Mr. C. W. Johnson, Curator, I have examined the collection of Odonata in the Boston Society of Natural History, and can add the following new records:

Agrion maculata Beauv. New to Connecticut, Rowayton, and Rhode Island, Apponaug

Lestes uncatus Kirby. New to Connecticut, Darien

Lestes inequalis Walsh. New to Massachusetts, Cohasset, Blue Hills, No. Reading, Manomet

Gomphus parvulus (Selys) Need. New to Massachusetts, No. Reading and East Walpole

Cordulegaster maculatus Selys. New to Vermont, Bennington

Libellula semifasciata Burm. New to Connecticut, Darien

Erythrodiplax berenice (Drury) Ris. New to Connecticut, Rowayton

Tramea carolina (L.) Hagen. New to Connecticut, Darien

153. *Tramea lacerata* Hagen. New to New England, Chelsea, Mass., Sept. 6, 1868, female

Pachydiplax longipennis (Burm.) Brauer. New to Connecticut, Darien

All my determinations for the above species have been verified by either Messrs. Ed. B. Williamson, R. A. Muttkowski or E. M Walker, and to these gentlemen I extend my most hearty thanks.

CYCLOLEPPTERON THEOBALD (DIPTERA: CULICIDAE).

Some new, *i. e.* hitherto unreported localities for the group of Anophelines which Mr. Theobald placed together under the genus Cyclolepptеron are: San Juan, Jajuga, Carolina, and Coamo Springs, Porto Rico, from which places specimens were sent by Dr. B. H. Dutcher, Lieut.-Colonel, Medical Corps, U. S. Army, during the period Sept. 11, 1914–July 15, 1915, since which time no collections from Porto Rico have been received.

C. S. Ludlow.

Army Medical Museum,
Washington, D. C.,
January 30, 1917.

NOTES ON NEW ENGLAND TACHINIDÆ, WITH THE DESCRIPTION OF ONE NEW GENUS AND TWO NEW SPECIES.

By Harrison E. Smith,
Entomological Assistant, Cereal and Forage Insect Investigations, United States Bureau of Entomology.

Pseudotachinomyia gen. nov.

Head wider than thorax, antennæ inserted above the eye middle, as viewed from the side, the head projects in front of the eye, nearly one-half the horizontal diameter of the eye. Probosis robust, shorter than height of head, palpi large, vibrissæ strong, cruciate, placed slightly above the front edge of the oral margin. Facial ridges bristly on at least the lower half, antennæ nearly as long as face, frontal bristles descending below the base of the third antennal joint. Eyes bare (microscopically, sparsely hairy), sides of face on lower half bare, less than one-third as wide as the facial depression, ocellar bristles proclinate. Wings hyaline, the first longitudinal vein bare, apical cell open, ending well before the extreme wing tip, bend of fourth longitudinal vein without distinct stump or long wrinkle. Abdomen short conical, male hypopygium projecting, female with wide, shining black pseudo-ovipositor. Type, the following species:

Pseudotachinomyia webberi sp. nov.

Black, gray pollinose species. Length, 6–10 mm.

Front in male nearly as wide as, in female about one and one-third times as wide as either eye, frontal vitta opaque brownish black, wider than sides of front. Parafrontals yellowish gray pollinose, frontal bristles in a single row, outside of these numerous fine, long, bristly hairs. Antennæ black, faintly tinged with rufous at base of third antennal joint, the third joint in male about five times as long as, in female from two and one-half to three times as long as, the second. Arista as long as the antennæ, microscopically sparsely pubescent, thickened on approximately the basal third, the penultimate joint two times as long as broad, cheeks at least one-fourth as wide as the eye height, palpi yellow. Thorax

grayish pollinose, as viewed from behind, marked with four wide black vittæ. Three postsutural and three sternopleural macrochætæ. Scutellum black or reddish yellow at apex, densely gray pollinose, bearing three pairs of long marginal and a shorter cruciate apical pair of macrochætæ. Scutellar disk clothed with many fine long erect hairs and a pair of discal macrochætæ. Legs black, knees yellowish, front pulvilli in male about as long as, in female one-half as long as, the last tarsal joint. Middle tibiæ on the outer front side each, bearing several long macrochætæ, the hind tibiæ with a row of stout bristles of irregular length. Abdomen yellowish gray pollinose, marked with several distinct shining black reflecting spots and a median black vitta. First segment bearing a median marginal pair of marcochætæ, second segment a median discal and marginal pair, third segment a median discal pair and a marginal row, and the fourth segment a discal and marginal row. Fine, long, bristly hairs of abdomen sub-erect. Male hypopygium projecting, the genitalia curving forward beneath the fourth[1] abdominal segment, the tip of the forceps resting in a sheath formed by a bisected flap-like projection on either side of the median venter of the fourth segment. Ventral aspects of forceps at base somewhat narrow, gradually broadening to their greatest width, whence they taper to a point at the tip. Inner margin of forceps on basal half, and the outer margin bearing bristly black hairs, the remaining surface shining brownish black with a few scattered black hairs. In the female the sheath of the ovipositor is similar in form to sheath of forceps in the male, but is not bisected on its front surface. The female ovipositor is not distinctly visible, but what appears to be this organ is shining black in color, broad at base and sharply pointed at tip. Wings longer than abdomen, small cross-vein far before tip of first longitudinal vein, third longitudinal vein bearing two to six bristles at its base, posterior end of hind cross-vein nearer to bend of the fourth longitudinal vein than to the small cross-vein. Calypteres milky white.

Described from 4 males and 9 females. (Holotype, U. S. N. M. Cat. No. 20201) a male taken at Melrose Highlands, Mass., May 16, '15. (Allotype, U. S. N. M.) a female taken at Malden, Mass., May 15, '15. (Paratypes) 1 male, 4 females taken at Malden, Mass., May 28, '15; 2 males, 3 females taken at Melrose High-

[1] Vestigial first abdominal segment not considered.

lands, Mass., June 15, '14, and May 20 to June 2, '15, placed in collection of author and the Gypsy Moth Parasite Laboratory. (Paratype) one female taken at Amherst, Mass., by unknown student at Massachusetts Agricultural College, during May or June, 1914, placed in collection of that institution. With the exception of the Amherst specimen, the others were taken by Mr. R. T. Webber, after whom this fine species is named.

Sciasma frontalis sp. nov.

Shining bluish black, destitute of pollen. Length, 4 mm.

Front one and one-third times as wide as either eye, frontal bristles descending to middle of second antennal joint, outside of these an anterior pair of proclinate and a pair of reclinate bristles. Ocellar bristles very weak, directed divergingly forward, frontal vitta about four-fifths as wide as sides of front. Parafrontals to base of second antennal joint opaque black, parafacials fulfous, eyes bare. Sides of face on lower half bare, about two-fifths as wide as the frontal vitta, facial plate deeply concave, hardly one-half as wide at base of antennæ as at the vibrissæ. Antennæ orange yellow, the second joint nearly as long as the third, arista black, thickened on the basal fourth to one-third, the penultimate joint broader than long. Vibrissæ cruciate, placed on a level with the front edge of the oral margin, diameter of head at vibrissæ about as long as at base of antennæ, cheeks one-tenth as wide as the eye height. Thorax shining bluish black, not vittate, one postutural and two sternopleural macrochætæ. Scutellum bearing a single pair of long marginal and a shorter apical pair of macrochætæ. Legs black, except the front coxæ and femora which are yellowish, hind tibiæ pectinate with two or three widely separated short bristles. Abdomen flattened, somewhat conical in shape, clothed with short appressed bristly hairs, several weak macrochætæ on margin of the fourth segment, the genitalia large and bulbous, curving forward beneath the fourth segment. Wings to tip of the second longitudinal vein wholly smoky brown, the remainder hyaline, veins destitute of setulæ, apical cell closed, the apex of third longitudinal vein obsolete. Anterior pair of calypteres sub-hyaline, the posterior pair smoky brown.

Described from a single female (Holotype) taken by the writer at West Springfield, Mass., August 13, 1915. Placed in the col-

lection of the Boston Society of Natural History. There is no evidence of the palpi being present in the specimen, and as these do not appear to be hidden in the oral cavity, nor the specimen to have been injured at this point, it is not improbable that more material will prove this species generically distinct.

Pelatachina pellucida Coq.[1]

During May, 1912, the writer reared specimens of this species at the Gypsy Moth Parasite Laboratory. The tachinid maggots had emerged from the larvæ of Euvanessa antiopa Linn., during the month of August, 1911, hibernating in the puparia through the winter of 1911–12. From 344 of the lepidopterous larvæ taken in the Lynn Woods, Mass., 214 puparia of this tachinid were obtained. Superparasitism existed to a great extent in the host larvæ, thus, the figures do not indicate the exact percentage of parasitism. The maggots live within the host, located in typical integumental funnels. The anal stigmata of the puparia are highly raised with the dorsal surface reticulated. A series of the reared specimens compared with the type of the species in the United States National Museum, appear identical with the specimen described by Coquillett. To my knowledge, this is the first record of this genus having been reared in North America although Brauer and Bergenstamm[2] record the rearing of the genotype, Pelatachina tibialis Fall. from Vanessa urticæ Linn. in Europe.

Compsilura concinnata Meig.

Since the introduction of this species from Europe and the establishing of it in the United States, by the United States Bureau of Entomology, as one of the foremost primary parasites of *Porthetria dispar* Linn. and *Euproctis chrysorrhœa* Linn., it is known to have been reared from more than twenty species of native North American Lepidoptera. In the study of reared Tachinidæ from various New England sources, it has been noted that this species is particularly prolific as a parasite of *Euvanessa antiopa* Linn. In certain instances of its parasitism upon this host in the New

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[1] Rev. N. Amer. Tach., p. 65. In the Proc. Biol. Soc. Wash., Vol. xxviii, pp. 19–24, Feb. 12, 1915. Townsend proposed the genus Eohyria for the reception of *P. pellucida* Coq., designating it the genotype.

[2] Die Zweiflügler des Kais. Mus. zu Wien., p. 558.

England States, the percentage of parasitism has been well over 50 per cent. At times, as many as five maggots have matured within an individual host. I have before me a single female of this species, reared from *Callosamia promethia* Drury, May 2, 1914, by Mr. William Reiff at Forest Hills, Mass. These data appear to establish the fact that *Compsilura concinnata* hibernates through the winter in New England in the pupa of this host. The writer has also reared a male and female of this species, from a pupa of *Diacrisia virginica* Fabr., taken as a larva late in the fall of 1915 at West Springfield, Mass., the adult Compsilura issuing May 12–15, 1916. The tachinid maggots apparently hibernate in the host pupa until just before they are ready to pupate, whence, they leave the host pupa, probably in early April, and pupate within the cocoon of their host.

Exoristoides slossonæ Coq.[1]

Three males of this species before me, taken at Bennington, Vt., June 18, 1915, by Mr. C. W. Johnson. One male with setulæ present upon the first longitudinal vein agrees in detail with Coquillett's description of slossonæ. The remaining two specimens without the presence of setulæ upon the first longitudinal vein, agree with the description of *Exorista spinipennis* Coq.,[2] yet it is evident that all three specimens are conspecific. The character of setulæ being present upon the first longitudinal vein, within the limits of *E. slossonæ*, is a variable one. With the exception of this character the descriptions of *Exorista spinipennis* and *E. slossonæ* are almost identical. I consider *Exorista spinipennis* Coq. a synonym of *Exoristoides slossonæ* Coq.

[1] Rev. N. Amer. Tach., p. 90–91.
[2] Rev. N. Amer. Tach., p. 95.

THE SPECIFIC DIFFERENCES BETWEEN *APANTESIS NAIS* DRURY, *A. VITTATA* FABR. AND *A. PHALERATA* HARRIS.

By Werner Marchand,
Princeton, New Jersey.

W. J. Holland in the "Moth Book," p. 132, expressed doubts whether the three forms, including *A. vittata f. radians* Walker, are really distinct. The latter view is held by J. B. Smith (Insects of New Jersey, p. 441) who says, speaking of these three species: "With good bred material at hand the differences are obvious." Without being able to look up the literature on this subject at present, I wish to report on a few observations made which tend to show that at least two of these species are distinct. During my stay at the Bussey Institution in Forest Hills, Mass., during the summer of 1915, I was permitted, through the kindness of Prof. W. M. Wheeler, to obtain lepidopterous material from the moth-trap of the Institution. Eggs were obtained of *A. nais* and *A. phalerata*, that is of two species identical in appearance with specimens preserved under these names at the Boston Museum of Natural History. Of *A. nais* eight different broods were raised. All descendants gave typical *nais:* males and females with yellow hind wings (never red!), with black costal border of the fore wings, and in the males without any black spots on the white collar band, while of the females, about half the number had such spots present. Of *A. phalerata* one brood was raised. All the descendants were typical *phalerata:* males with pale, yellowish-pink hind wings, often less spotted as compared with *A. nais;* females with bright coral-red hind wings; both sexes with white costal border and with two black spots on the white collar band above the head; no yellow specimens. Numerous attempts were made to obtain hybrids of the two species but all in vain: the two species do not interbreed. No difficulty was encountered in obtaining offspring within the same species. A second generation was raised before fall of both *A. nais* and *A. phalerata.* No difference in the appearance of the second generation was seen as compared with the first generation. Hence I conclude that the two species are certainly distinct.

Of *Apantesis vittata* only males were found, hence this species

could not be bred. The fact that none of the broods of *nais* and *phalerata* gave any specimens of the type of *vittata*, seems to show, that *vittata* represents a third, entirely distinct, species. In *vittata* both yellow and red specimens are found in both sexes. The black spots on the hind wings as well as on the fore wings tend to fuse together. Extremes of such forms seem to correspond with *A. radians* Walker. The costal border is always white which serves to separate the yellow specimens from *A. nais*, and the white collar band is always without black spots which serves to separate the red specimens from *A. phalerata*. The size is slightly above that of *A. nais*, on the average.

On the suggestion of Dr. Henry Skinner I compared the male genital claspers of several individuals of the three species spoken of. It was found that in fact *A. nais* and *A. phalerata* differ widely in the structure of these claspers, and it is not unlikely that copulation would be mechanically impossible. The genitalia of *A. vittata* are however very similar to those of *A. nais*, and it would be of interest to attempt hybridization of these two species.

The fact that Holland's abundant material came mostly from one and the same locality "one little ravine in western Pennsylvania," does certainly not imply that it was all of the same species. No less than eight different species of *Apantesis*, including the above spoken of, were found in the immediate neighborhood of the Bussey Institution, attracted to light, and fairly abundant. Most of these are certainly less variable than often supposed to be the case in this genus.

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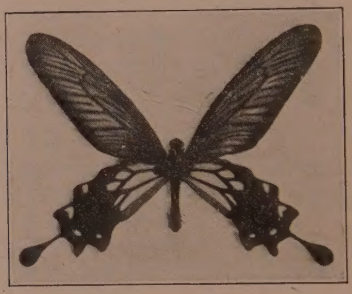

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